Syllabus: ESCI 558: 3D Reflection Seismic Data Interpretation, Fall 2015

Instructor: Dale Sawyer, KWG 313, dale@rice.edu, 713-348-5106 (o), 713-301-6759 (c)

Teaching Fellow: Tuo Zhang , tuo.zhang@rice.edu

Office & Lab Hours: By appt.

Class Meetings: Monday 1:00-4:00 PM
Dell Butcher 110, Rice Visualization Center

Computer Labs: Keith-Wiess Geological lab (KWG 130)
Keith-Wiess Geological lab (KWG 306)

Required Text: Herron, Donald A., 2011, *First Steps in Seismic Interpretation, SEG Geophysical Monograph Series,* Society of Exploration Geophysicists, Tulsa, Oklahoma

Supplemental Reading: Alistair R. Brown, 2011, *Interpretation of Three-Dimensional Seismic Data. 7th Edition.* AAPG Memoir 42.

Course Goals:
The goal of this course is to introduce you to workstation-based 3D seismic interpretation methods. We are using Schlumberger Petrel software. We will review basic seismic theory but the focus of this course will be on structural and stratigraphic interpretation of various 3D seismic data sets. At the end of the course, participants will have a sound practical and theoretical knowledge of 3D interpretation techniques. Participants will be able to independently interpret a 3D data set on a Petrel workstation and present their structural and stratigraphic models.

Honor Code:
The honor system is one of the oldest traditions at Rice and requires each Rice student to adhere to a strict code of academic integrity. Quizzes will be covered by the Honor Code. Assignments and your Final Project must be your own work. However, you may collaborate with another student in learning how to do something.

Accommodations:
If you have a documented disability that will affect your work in class, please discuss your needs with me. You will also need to register with Disability Support Services in Allen Center.

Grading:
Interpretation Assignments (50%) Assignments will consist of workstation-based interpretation assignments, which will usually be started during class time and finished on your own. You will need to spend time in the computer labs outside of class hours. A due date will be specified for each assignment. Late assignments will be penalized 10% for each late day. Talk to me in advance if you have extenuating circumstances. ***Please label all files in this format*: "Yourname-ESCI558-assign3.doc"**

Quizzes (20%) A series of quizzes will cover the material presented in required reading during the course.

Literature Presentation (10%) Each student will be asked to choose a scientific article related to seismic data interpretation and present it to the class. The SEG publication, "The Leading Edge," is a good source of such articles. The joint SEG and AAPG journal called "Interpretation," is also a good source of such articles. I will suggest come other interesting articles, but am open to articles you find on your own. When you have chosen an article, please run it by me. All presentations have to be set before Spring Break.

Final project (20%) Your final project will consist of a seismic interpretation project that will be assigned toward the end of the semester. You will be asked to give a presentation to the class during the last class of the semester, and to turn in a final, written version. A grading rubric will be provided. All assignments and the written final project will be turned in via the class OwlSpace dropbox.

Tentative Syllabus

Date	*Lecture Topic*	*Lab Dataset/Topic*	*Reading & Quiz*
Aug. 24	Basics of 3D seismic data loading and Interpretation	Introduction to Petrel, data loading, horizon interpretation Assignment 1, due Sept. 7	Read C1
Aug. 31	Structural Interpretation of Seismic Data	Picking and analyzing faults Assignment 2, due Sept. 14	Read C2 & C7
Sept. 7	Labor day – no class		
Sept. 14	Structural Interpretation	Making depth maps from horizon and fault interps Assignment 3, due Sept. 21	Quiz C2 & C7 Read C3 & C8
Sept. 21		Large 3D Datasets in the Viz Center Assignment 4, due Oct. 5	Quiz C3 & C8 Read C4
Sept. 28	Reservoirs & Amplitudes	Assignment 5, due Oct. 12	Quiz C4 Read C5
Oct. 5	Seismic Stratigraphy		Quiz C5 Read C6
Oct. 12	*Spring break-no class*		
Oct. 19	Intro to Attributes	Boonesville, Assignment 6, due Oct. 26	Quiz C6 Read C9 & C10 Assign Literature presentations
Oct. 26	More Attributes	Snark, Assignment 7, due Nov. 9	Intro to NW shelf
Nov. 2	TBD	Snark, Assignment 8, due Nov. 16	
Nov. 9	Final project presentations Work on final project	Snark, Assignment 9, due Nov. 23	Literature presentations
Nov. 16	Final project presentations Work on final project	Snark	Literature presentations
Nov. 23	Final project presentations Work on final project	Snark	Literature presentations
Nov. 30	Final project presentations Work on final project	Snark	Final project presentations
TBD	Final Project reports due to Owlspace dropbox		